"Chestnut Blight" of Chinkapin in Florida[1]

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INTRODUCTION: Chinkapin, Allegheny chinkapin, or eastern chinkapin *[Castanea pumila (L.)* Mill. var. *pumila;* including C. *ashei* Sudw. in Ashe *(C. pumila* var. *ashei* Sudw.); *C. floridana* (Sarg.) Ashe (C. *alnifolia* var. *floridana* Sarg.): *C. alnifolia* Nutt.] is a shrub or small tree with a natural range extending along the Coastal Plain from eastern Pennsylvania and southern New Jersey into eastern Kentucky, Tennessee, and West Virginia, southward and westward into north and central Florida (Fig. 1) and east Texas, and northward into Arkansas, southeastern Oklahoma and southwestern Missouri. It is locally abundant as a clonal shrub on frequently burned longleaf pine-scrub oak sand hills, in open stands of planted pines on similar sites. well-drained stream terraces, dry, rocky, sandy, and loamy soils, and less frequently in sand pine-oak scrub. It also occurs in railroad rights-of-way, fence and hedge rows, and old fields, as well as in local and scattered populations in xeric to mesic mixed woodlands (Harlow and Harrar 1958; Godfrey 1988; USDA Forest Service 2003).

The nuts of C. *pumila* are edible and can be used as chestnuts. They are also a natural wildlife food. Chinkapin is promoted accordingly in ecological and conservation plantings (Halls 1977; NC Division of Forestry 2003; Payne *et. al.* 1993; USDA Natural Resources Conservation Service 2003).

Chinkapin is a generic relative of the once stately and widespread American chestnut [C. *dentata* (Marsh.) Borkh.], and like its more famous relative, *C. pumila* is susceptible to the notorious chestnut blight fungus *[Cyphonectria parasitica* (Murr.) Barr]. First detected in the United States in 1900, the chestnut blight fungus is an introduced pathogen which has devastated American chestnut throughout its
native range (Anagnostakis 1987; Hepting 1974; Kuhlman 1978).

Today, *C. parasitica* survives as a relatively innocuous bark saprophyte or parasite on a variety of hardwood species, particularly oaks (Baird 1991; Griffin and Elkins 1986; Nash and Stambaugh 1987; Phelps 1974; Stipes *et. al.* 1978; Torsello *et. al.* 1994). It also continues to attack and kill American chestnut trees (Boyer 1961; Griffin and Elkins 1986). At least in Louisiana (Wallace and Peacher 1970) and in Florida (Florida Department of Agriculture and Consumer Services, Division of Plant Industry Specimen reports P903059 and P971586), the pathogen acts with similar aggression on trees and sprouts of C. *pumila.* Our knowledge of the distribution and impact of this disease in Florida is limited at best. Hopefully, this circular will heighten awareness of the disease and serve to facilitate increased understanding.

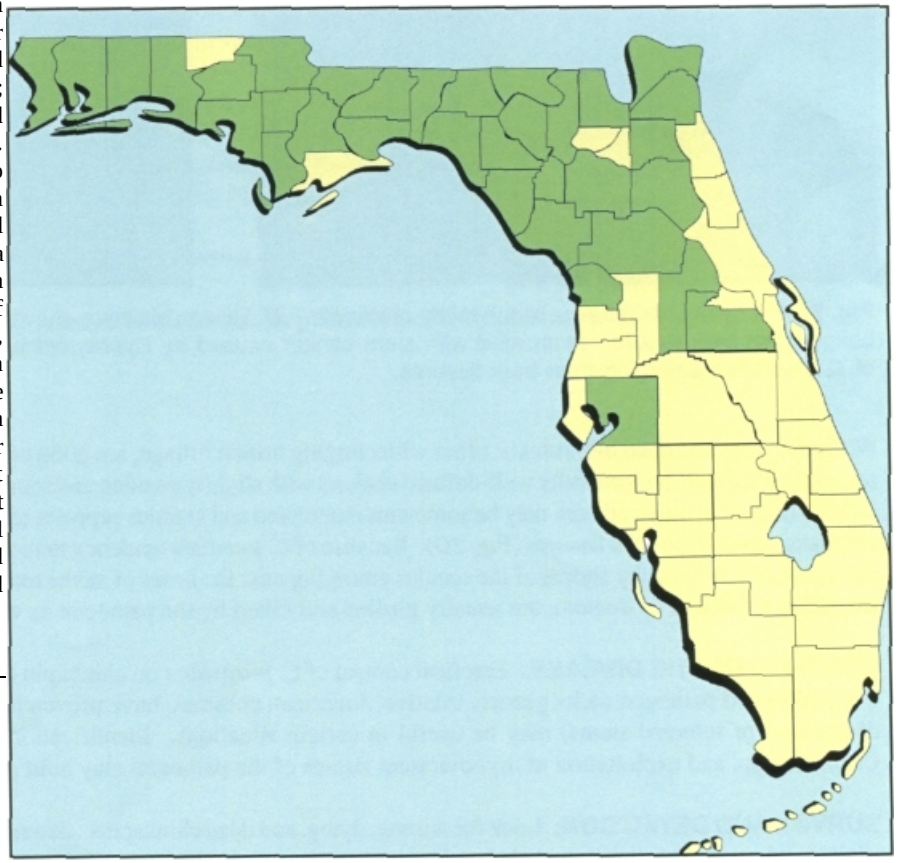

Fig. 1. Distribution map of chinkapin (Castanea *pumila* var. *pumila)* in Florida; green colored counties indicate known occurrence of the species therein (Wunderlin and Hansen 2003).

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SYMPTOMS OF INFECTION: Chinkapins infected with *C. parasitica* are easily recognized in the field.

Fig. 2. A) Leaves and flowers of a healthy chinkapin. B) Dying chinkapin showing drooping and discolored foliage. C) Longitudinal bark fissures associated with stem canker caused by *Cyphonectria parasitica*. D) Yellow-orange stromata of *C. parasitica* emerging from bark fissures.

Wilting, dying, and dead individuals, often with clinging brown foliage, are good candidates for inspection (Fig. 2B). Infected stems show diffuse, but generally well-defined cankers with slightly swollen and roughened bark displaying profuse longitudinal fissures (Fig. 2C). Infected bark maybe somewhat discolored and at times supports telltale yellow-orange pycnidial or perithecial stromata, typically in bark fissures (Fig. 2D). Because of C. *pumila's* tendency to form clonal thickets from root sprouts, it is not uncommon to see healthy shoots of the species emerging near the bases of stems recently killed by *C. parasitica.* In time, new shoots, like those of C. *dentata*, are usually girdled and killed by the pathogen as well.

CONTROL OF THE DISEASE: Practical control of C. *parasitica* on chinkapin does not exist. Herculean efforts to control this introduced pathogen on its generic relative, American chestnut, have proven largely futile. Sanitation (i.e., removal and destruction of infected stems) may be useful in certain situations. Identification and deployment of genetic resistance in *Castanea* spp. and exploitation of hypovirulent strains of the pathogen may hold promise in the future.

SURVEY AND DETECTION: Look for wilting, dying, and dead chinkapins. Examine bark for diffuse cankers characterized by slight swelling, discoloration, and distinct longitudinal fissuring. Occurrences of yellow-orange pycnicial or perithecial stromata are strong signs, but *in vitro* cultural examination and/or microscopic observation is necessary for confirmation of C. *parasitica.*

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